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ABSTRACT

OLED devices are disclosed having increased external electroluminescence quantum efficiencies, i.e., increased "out-coupling" efficiencies. OLED devices that have increased out-coupling efficiencies and that are also protected from environmental elements such as moisture and oxygen are also disclosed. The OLED device of the present invention comprises a substrate; an active region positioned on the substrate, wherein the active region comprises an anode layer, a cathode layer and a light-emitting layer disposed between the anode layer and the cathode layer; and a polymeric layer disposed (a) over the active region, (b) under the active region or (c) both over and under the active region. The polymeric layer has microparticles incorporated therein, and the microparticles are effective to increase the out-coupling efficiency of the OLED. In one embodiment, the OLED device comprises a composite barrier layer and the microparticles are incorporated in a polymeric planarizing sublayer of the composite barrier layer. The composite barrier layer in this embodiment also protects the OLED from damage caused by environmental elements such as moisture and/or oxygen.